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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
KAUSHAL, SUMESH	

ART UNIT	PAPER NUMBER
1636	

DATE MAILED: 08/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/868,663	TIMSIT ET AL.	
	Examiner	Art Unit	
	Sumesh Kaushal Ph.D.	1636	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Applicant's response filed on 02/02/04 has been acknowledged.
Claims 1-16 are pending and are examined in this office action.

Applicants are required to follow Amendment Practice under revised 37 CFR §1.121. The fax phone numbers for the organization where this application or proceeding is assigned is ***703-872-9306****.*

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action. Rejections and/or objections not reiterated from previous office actions are hereby withdrawn. The references cited herein are of record in a prior Office action.

Claim Rejections - 35 USC § 102

Claims 1-7 and 10-16 are rejected under 35 U.S.C. 102(a) and (e) as being anticipated by Greenwood et al (US 6,183,735 2001), for the same reasons of record as set forth in the office action mailed on 08/01/03.

Greenwood teaches an injectable, stable, immortalized, non-tumorigenic rat retinal pigmenty epithelial cell line (RPE: IO/LD/7), wherein the cells of the cell line comprise a polynucleotide comprising a heat-sensitive SV40 tsa58 T-antigen oncogene. The cited art further teaches that these RPE cells can be non-tumorigenically integrated into the retina of a mammalian host. The RPE cell line further comprises an expression vector comprising a polynucleotide coding for a polypeptide for treating ophthamological or neurological disorders. The cited art further teaches that these RPE cells can be integrate non-tumorigenically into the retina of the mammalian host to produce the polypeptide in the eye (see col. 11 example-3, col.12 example-4; col.15-16). The cited

art further teaches an in-vivo injectable preparation of cells which contains $2.10x10^4$ cell/ul (col.12, line 56-59). In addition the cited art teaches the making of cell suspension for Flux-cytometery using the collaegenase/dispase treatment of cells to make single cell suspension suspended in EDTA, which prevent the aggregation of suspended cells (col.7 lines 5-36). The cited art also teaches the treatment of RPC cells with trypsin to make cells suspension (col.11, lines 6-24). Besides the biochemical treatment the process of trypsinization inherently encompasses a physical treatment of cells (to make single cell suspension), which requires shaking of repeated pipetteting of displaced cells. Furthermore a cell suspension used for Flux-cytometery is an aggregate free preparation that inherently comprises a single cell suspension of RPE cells, which is well below the size range of 30-200 microns. Thus the cited art clearly anticipate the invention as claimed.

Claims 1-7 and 10-16 are rejected under 35 U.S.C. 102 (b) as being anticipated by Greenwood et al (WO 97/40139, 1997), for the same reasons of record as set forth in the office action mailed on 08/01/03.

Even though the WO 97/40139, 1997 is document in French language the disclosure is identical to the US 6,183,735, since the US '735 patent is national stage application (371) of WO 97/40139, 1997 (PCT/FR97/00709). Accordingly the WO97/40139 clearly teaches an injectable, stable, immortalized, non-tumorigenic rat retinal pigmenty epithelial cell line (RPE: IO/LD/7), wherein the cells of the cell line comprise a polynucleotide comprising a heat-sensitive SV40 tsa58 T-antigen oncogene. The cited art further teaches that these RPE cells can be non-tumorigenically integrated into the retina of a mammalian host. The RPE cell line further comprises an expression vector comprising a polynucleotide coding for a polypeptide for treating ophthamological or neurological disorders. The cited art further teaches that these RPE cells can be integrate non-tumorigenically into the retina of the mammalian host to produce the polypeptide in the eye (see page 17 example-3; page 19 example-4; page 28-29). The cited art further teaches an in-vivo injectable preparation of cells, which contains $2.10x10^4$ cell/ul (page 20, line 10). In addition the cited art teaches the making of cell

suspension for Flux-cytometery using the collaegenase/dispase treatment of cells to make single cell suspension suspended in EDTA, which prevent the aggregation of suspended cells (page 10, lines 15-26). The cited art also teaches the treatment of RPC cells with trypsin to make cells suspension (page 17, lines 5-19). Besides the biochemical treatment the process of trypsinization inherently encompasses a physical treatment of cells (to make single cell suspension), which requires shaking of repeated pipetteting of displaced cells. Furthermore a cell suspension used for Flux-cytometery is an aggregate free preparation that inherently comprises a single cell suspension of RPE cells, which is well below the size range of 30-200 microns. Thus the cited art clearly anticipate the invention as claimed.

Claims 1-7 and 10-16 are rejected under 35 U.S.C. 102 (e) as being anticipated by Greenwood et al (US 6,090,624 2000), for the same reasons of record as set forth in the office action mailed on 08/01/03.

Greenwood teaches an immortalized non-tumorigenic human retinal pigmentary epithelial cell line (RPC), wherein the cells of the cell line comprise a nucleic acid, which encodes a non-thermosensitive viral or cellular oncogene. The cited art further teaches that RPE cells when injected in-vivo integrate into the host retina (col.9 example-2; col.13 example-4, col.16 example-5). In addition the cited art teaches the making of cell suspension for Flux-cytometery using the collaegenase/dispase treatment of cells to make single cell suspension suspended in EDTA, which prevent the aggregation of suspended cells (col.8 lines 34-47). The cited art also teaches the treatment of RPC cells with trypsin to make cells suspension (col.12, lines 15-35). Besides the biochemical treatment the process of trypsinization inherently encompasses a physical treatment of cells (to make single cell suspension), which requires shaking of repeated pipetteting of displaced cells. Furthermore a cell suspension used for Flux-cytometery is an aggregate free preparation, which inherently comprises a single cell suspension of RPE cells, which is well below the size range of 30-200 microns. Thus the cited art clearly anticipate the invention as claimed.

Response to arguments

In response to prior rejection(s) above as anticipated by Greenwood's '735, '139 and 624 the applicant argues that the prior art did not envisage the deleterious effect induced by the presence of cell aggregates in administered formulations. The applicant argues that the instant invention is directed to compositions free of deleterious aggregates, which may be safely administered to a patient in need of such treatment. The applicant concluded that Greenwood does not provided the requisite teaching of this improvement.

However, applicant's arguments are found NOT persuasive because Greenwood ('735, '139 and '624) clearly teaches an injectable preparation of rat retinal pigmenty epithelial cell (RPE: IO/LD/7). Greenwood '735 clearly teaches that these RPE cells can be integrate non-tumorigenically into the retina of the mammalian host to produce the polypeptide in the eye (see col. 11 example-3, col.12 example-4; col.15-16). The cited art further teaches an in-vivo injectable preparation of cells which contains $2.10x10^4$ cell/ml (col.12, line 56-59). Similarly, Greenwood '139 clearly teaches that these RPE cells can be integrate non-tumorigenically into the retina of the mammalian host to produce the polypeptide in the eye (see page 17 example-3; page 19 example-4; page 28-29). The cited art further teaches an in-vivo injectable preparation of cells, which contains $2.10x10^4$ cell/ul (page 20, line 10). Similarly, Greenwood '624 clearly teaches that RPE cells when injected in-vivo integrate into the host retina (col.9 example-2; col.13 example-4, col.16 example-5).

In addition the invention as claimed encompasses a product by process wherein the product obtained by the process is indistinguishable form the product obtained in the cited art. Product-by-process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps (see MPEP §2113). Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695,

698, 227 USPQ 964, 966 (Fed. Cir. 1985). Given the broadest reasonable interpretation in the instant case, an injectable, immortalized, non-tumorigenic RPC preparation as taught by the prior art of record is indistinguishable from the invention as claimed. Furthermore, preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. *See In re Hirao, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and Kropa v. Robie, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).* In addition, if the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. *See In re Casey, 152 USPQ 235 (CCPA 1967) and In re Otto, 136 USPQ 458, 459 (CCPA 1963).* Thus the cited art (Greenwood's US 6,183,735; 6090624 and WO 97/40139) clearly anticipate the invention as claimed.

Claim Rejections - 35 USC § 103

Claims 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Greenwood's US 6,183,735; US 6,090,624 and WO 97/40139 as applied to claims 1, 3-6, 10-11 and 13-16 above, and further in view of Roux et al (J cell. Physiol.159:101-113, 1994), for the same reasons of record as set forth in the office action mailed on 08/01/03.

As stated above Greenwood teaches an injectable, stable, immortalized, non-tumorigenic rat retinal pigmenty epithelial cell line (RPE: IO/LD/7), wherein the cells of the cell line comprise a polynucleotide comprising a heat-sensitive SV40 tsa58 T-antigen oncogene. The cited art further teaches that these RPE cells can be non-tumorigenically integrated into the retina of a mammalian host. The RPE cell line further comprises an expression vector comprising a polynucleotide coding for a polypeptide for treating ophthamological or neurological disorders. The cited art further teaches that these RPE cells can be integrate non-tumorigenically into the retina of the mammalian

host to produce the polypeptide in the eye (see col. 11 example-3, col.12 example-4; col.15-16). The cited art further teaches an in-vivo injectable preparation of cells which contains $2.10x10^4$ cell/ml (col.12, line 56-59). In addition the cited art teaches the making of cell suspension for Flux-cytometery using the collaegenase/dispase treatment of cells to make single cell suspension suspended in EDTA, which prevent the aggregation of suspended cells (col.7 lines 5-36). The cited art also teaches the treatment of RPC cells with trypsin to make cells suspension (col.11, lines 6-24). Besides the biochemical treatment the process of trypsinization inherently encompasses a physical treatment of cells (to make single cell suspension), which requires shaking of repeated pipetteting of displaced cells. Furthermore a cell suspension used for Flux-cytometery is an aggregate free preparation that inherently comprises a single cell suspension of RPE cells, which is well below the size range of 30-200 microns. However Greenwood does not teach the physical treatment of cells to prevent aggregate formation by filtration or screening and a cell preparation that comprises no aggregates of size greater than 30-200 microns.

Roux teaches a method of making cells suspension of adherent micro-vascular endothelial cells (page 102, col.1). The cited art teaches that after enzymatic treatment the brain tissue was suspended in 25 ml medium containing 25% BSA. The cells were centrifuged at 1000g for 10 minutes to eliminate contaminating cells and debris, passed through a 120 micron nylon mesh and incubated in medium containing collagenase/dispase. The clumps of cells were then layered over Percoll gradients prepared by centrifuging 50% isotonic Percoll at 25,000g for 1 hr. The band containing the isolated cells was removed for further use (page 102, cil.1 para.2). Roux clearly teaches a method of making single cell preparation, wherein the preparation contains no cells aggregates greater than 120 microns. Furthermore, Percoll gradients centrifugation results in isolation of cells in a single cell suspension.

Thus it would have been obvious to one ordinary skill in the art at the time of filing to modify the preparation of cells as taught by Greenwood with the cell separation procedure as taught by Roux. One would have been motivated to make an aggregate free cell preparation, since such a preparation can be used to isolate individual colonies

originated from a single cell. One would have been further motivated to obtain individual clones, since each clone is a possible candidate that elicits unique cell characteristics especially after transformation. (see Greenwood's US 6,090,624 col.12, lines 36-43; US 6,183,735 col.11, lines 25-32). One would have a reasonable expectation of success, since the method of cell separation is routine in the art. Thus the invention as claimed is prima facie obvious in view of cited prior art of record.

Response to arguments

The applicant argues that the instant claims as amended are directed to specific cellular preparations that are capable of being administered systemically. The applicant argues that the cell suspensions as cited in the prior art of record were not formulated for systemic administration. The applicant argues that there is no suggestion or motivation to formulate unaggregated cell suspensions for systemic administration.

However, applicant's argument are found NOT persuasive because as stated above, Greenwood ('735, '624 and '139) clearly teaches a retinal pigmenty epithelial cell preparation in a non-aggregate form which has been administered in vivo (supra*). Furthermore the system administration of the cell suspension is only the intended use of the product as claimed. A recitation directed to the manner in which a claimed apparatus is intended to be used does not distinguish the claimed apparatus from the prior art if the prior art has the capability to so perform see MPEP 2114 and *Ex parte Masham* 2 USPQ2d 1647 (1987). Since the recitation of claim limitation "capable of systemic administration" does not distinguish the claimed composition from the prior art the invention as claimed is prima facie obvious in view of cited prior art of record.

Claim Rejections - 35 USC § 112

Claims 1-16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to

which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Nature Of Invention:

Invention relates to a preparation genetically engineered mammalian epithelial cell used in a method for gene therapy.

Breadth Of Claims And Guidance Provided By The Inventor:

The scope of invention as claimed encompasses a composition to be administered systemically comprising a genetically engineered mammalian epithelial cell that produces any and all growth factors to treat any and all diseases of the nervous system. However, the specification only disclosed a genetically engineered immortalized mammalian cerebral endothelial cell line (RBE4) see page 18 line 17. The specification further teaches genetically engineered RBE4 cells are further modified to express β–galactosidase (RBEZ) or green fluorescent protein (RBE4/GFP) see pages 18 and 19. The specification further teaches that the injection of RBEZ (a cerebral endothelial cell line) into carotid artery results in the incorporation of injected cells in the lumen of intra-cerebral vessels and intra-parenchymatous extraluminal tissue (spec. page 26, lines 10-22, fig-3). The specification discloses that the invention (as claimed) more particularly relates to a pharmaceutical formulation to be administered systemically, advantageously by the intra-arterial route, in a gene therapy method for a disease of the central nervous system in a subject, characterized in that the cells of the preparation present in said formulation are transfected with at least one gene coding for an active substance in the treatment or prevention of a disease of the nervous system (spec. page 14 lines 21-30). However, the specification as filed fails to disclose any genetically engineered non-tumorigenic, immortalized epithelial cells that can be used as a composition or pharmaceutical composition to treat any diseases of nervous system. The specification even fails to establish any nexus between a growth factor of interest (any) to particular disease of nervous system (Parkinson's disease, Alzheimer's disease, Huntington's disease, Neuropathy or Epilepsy etc).

State Of Art And Predictability:

The gene therapy is considered highly experimental area of research at this time, and both researchers and the public agree that demonstrable progress to date has fallen short of initial expectations. No cures can as yet be attributed to gene therapy. (Rosenberg et al, Science 287:1751, 2000, Verma, Mol. Ther. 1: 493, 2000, Friedmann, Science 287(5461):2163-5, 2000, Anderson WF, Nature 392:25-30, 1998; Verma et al Nature 389:239-242, 1997, Touchette, Nat. Med. 2(1) 7-8, 1996). None of the human studies to date has shown definite efficacy, despite more than 300 protocols involving 3000 patients since September 1990 (Anderson page 25 col.1 para.1). Most studies have neglected to include well-defined biochemical or clinical end points that would clearly indicate whether the therapy is having a desired effect. For example, in original clinical trial to treat adenosine deaminase (ADA) deficiency, patients received a total of 11 infusions of genetically modified autologous T-lymphocytes along with polyethylene glycol (PEG)-ADA. After 7 years of therapy no definitive conclusion is drawn as to the contribution of gene therapy to the present state of health of patients (Touchette, page 7 col.3, para.1; Anderson page 29 col.1, para.6). Furthermore, Recombinant DNA Advisory committee (RAC) also emphasized that expectations of current gene therapy protocols have been over sold without any apparent success (Touchette page 7, col.1 para. 2; page 8, col.2 para 1-4). The advisory panel further emphasized the need for a greater understanding of an underlying mechanism that contribute to a genetic disease along with the pathogenesis of the disease. (Touchette, page 7, col.3, para.3). In instant case the brain is the both most genetically complex organ in the body and most difficult to treat. The cells in brain express more than 75,000 human genes than any other tissue in body, producing the greatest number of transcripts (Matthew et al Mol. Med. Today 11:485-93, 1998). Furthermore, the treatment of CNS in itself is unique since it include the post-mitotic neurons, heterogeneity of cell types, critical functions of specific neuronal circuits, limited access, volumetric constraints, and presence of the blood-brain barrier the challenges not usually at issue in peripheral gene therapy. In addition, the gene therapy for neurological disorders is currently an experimental concept that requires elucidation of physiological mechanisms and genetic basis underlying each neurological disease (Costantini et al Gene therapy 7:93-119, 2000,

see pages 98-103). Even though, the gene therapy holds much promise to come, the success will only be achieved through continued rigorous research on the most fundamental mechanisms that contribute to a genetic disease along with the pathogenesis of the disease, gene delivery and gene expression in animals.

Furthermore, the word "Pharmaceutical" means the administration of a medicinal drug of therapeutic value, which has a characteristic interaction in a body, in terms of its absorption, distribution, metabolism and excretion (see Pharmaceutical and related terms in Merriam Webster's Dictionary). The current invention is drawn to a preparation comprising genetically modified epithelial cells expressing any growth factor gene products, wherein the growth factor encodes a gene product to treat or prevent any diseases of nervous system in-vivo. The specification fails to provide any guidelines for determining which individual (with specific CNS disease) need to be administered with what pharmaceutical composition (cells expressing a specific growth factor). Furthermore, considering the scope of a disease of nervous system, the specification fails to provide any guidance regarding whether the disease would be the result of the loss of gene product or is the result of altered gene product function. It is even unclear whether the treatment of the disease associated with the gene product (as claimed) would require increase or decrease in the expression of the gene product.

Response to arguments

The applicant argues that even though the cells may be transfected with a gene, administration of the cell preparation does not result in the delivery of that gene to the subject's chromosomes. The applicant argues that the state of the art with respect to gene therapy has no impact on the enablement of the instant invention.

However, applicant's argument are found NOT persuasive because the under the law, the disclosure "shall inform how to use, not how to find out how to use for themselves." See In re Gardner 475 F.2d 1389, 177 USPQ 396 (CCPA 1973). The only disclosed utility of administering the genetically engineered mammalian cells or especially genetically engineered to a subject is a cell-based gene therapy for the treatment or prevention of a disease of the nervous system (see spec. page 14 lines 21-30). The specification as filed fails to disclose any genetically engineered non-

tumorigenic, immortalized mammalian cells (especially epithelial cell) that can be used as a composition or pharmaceutical composition to treat any diseases of nervous system. The specification even fails to establish any nexus between a growth factor of interest (any) to particular disease of nervous system (Parkinson's disease, Alzheimer's disease, Huntington's disease, Neuropathy or Epilepsy etc).

In instant case cell-based gene therapies to treat any neuronal disorders by administering genetically engineered epithelial cell from any origin, wherein the cell express any growth factor are not considered routine in the art and without sufficient guidance to a specific therapeutic gene of interest in context to a specific disease the experimentation left to those skilled in the art is unnecessarily, and improperly, extensive and undue. See In re Wands 858 F.2d 731, 8 USPQ2nd 1400 (Fed. Cir, 1988). It is noted that the unpredictability of a particular area may alone provide reasonable doubt as to the accuracy of the broad statement made in support of enablement of claims. See Ex parte Singh, 17 USPQ2d 1714 (BPAI 1991).

Furthermore, it is noted that patent protection is granted in return for an enabling disclosure of an invention, not for vague intimations of general ideas that may or may not be workable (*See Brenner v. Manson, 383 U.S. 519, 536, 148 USPQ 689, 696 (1966), Stating, in context of the utility requirement, that "a patent is not a hunting license. It is not a reward for the search, but compensation for its successful conclusion"*) Tossing out the mere germ of an idea does not constitute enabling disclosure. While every aspect of a generic claim certainly need not have been carried out by an inventor, or exemplified in the specification, reasonable detail must be provided in order to enable members of the public to understand and carry out the invention. In instant case the considering applicant's limited disclosure and the state of the art one skill in the art would have to engage in excessive and undue amount of experimentation to exercise the invention as claimed.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is indefinite because it recites claim limitation "possibly transfected" in line 1. The term "possibly" is open ended therefore it is unclear what encompasses possibly transfected in this context.

Conclusion

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sumesh Kaushal Ph.D. whose telephone number is 571-272-0769. The examiner can normally be reached on Mon-Fri. from 9AM-5PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yucel Irem Ph.D. can be reached on 571-272-0781.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to ***(571) 272-0547.***

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199. The fax phone number for the organization where this application or proceeding is assigned is **703-872-9306.**

Sumesh Kaushal
Examiner GAU 1636

SUMESH KAUSHAL
PATENT EXAMINER